DOE Site:	**Hanford, WA**
EM Project:	**ERDF**
ETR Report Date:	**June 2007**

ETR-6

External Technical Review Summary

United States Department of Energy Office of Environmental Management (DOE-EM)

External Technical Review of the Operational Issues at the Environmental Restoration Disposal Facility(ERDF) at Hanford

Why DOE-EM Did This Review

The ERDF is a large-scale disposal facility authorized to receive waste from Hanford cleanup activities. It contains double-lined cells with a RCRA Subtitle C-type liner and leachate collection system. By 2007, 6.8 million tons of waste with 39,000 Curies of radioactivity had been placed in the ERDF. In 2006, events occurred that affected the operation of the automatic leachate transfer pumps and a technician confessed to having not performed compaction tests and to falsification of the data. *The external review objective was to assess the impacts of the following operational irregularities identified in 2006: deviations from the waste placement plan; falsification of compaction test data; adequacy of compaction testing; and failure of the leachate collection system and the failure to identify the leachate collection system failure.*

What the ETR Team Recommended

The External Review Team concluded that the assessments and management plan by Washington Closure Hanford and their subcontractor (Stoller Corporation) will address the issues when fully completed and implemented. The following recommendations were made to supplement the proposed management plan:

- Permanent staff be assigned to tasks associated with each operational and management change
- Install an automated system to monitor leachate depth
- The proposed *ERDF Placement Optimization and Settlement Monitoring Test* be given priority
- Stoller should use compaction equipment that employs GPS-based grade control and stiffness-based instruments to assess compaction directly and real time.
- The settlement monitoring program should be instituted quickly and results periodically reviewed.
- Performance based methods for waste placement should be developed and implemented. This will eliminate the need for density testing.

What the ETR Team Found

The ETR team concluded that Washington Closure Hanford (WCH) and Stoller Corporation (Stoller) identified key issues that led to falsification of the compaction data and have proposed a management plan that will greatly reduce the probability of data falsification in the future. The level of oversight included in the management plan is sufficient to preclude requiring independent third party compaction testing. The ETR team also concluded that the plan proposed by WCH and Stoller to manage leachate pumping will minimize the likelihood of future unrecognized pumping system failures and excessive leachate depth in the ERDF. However, the long-term effectiveness of these changes hinges on permanent staff being assigned for direct oversight of these issues.

Because the compaction data were falsified for an extended period, significant uncertainty exists regarding the ability of the waste to provide effective support for the final cover to be placed on the ERDF. WCH has proposed a field test that will address this issue (*ERDF Placement Optimization and Settlement Monitoring Test*). The outcomes of this test, along with a settlement-monitoring program on the existing filled cells, will provide insight into the ability of the existing waste to support the final cover. This field test can also be used to assess the suitability of the 3:1 soil-debris ratio and will provide the information needed to develop a performance-based method for waste placement.

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The purpose of an External Technical Review (ETR) is to reduce technical risk and uncertainty. ETRs provide pertinent information for DOE-EM to assess technical risk associated with projects and develop strategies for reducing the technical risk and to provide technical information needed to support critical project decisions. Technical risk reduction increases the probability of successful implementation of technical scope. In general, ETRs assesses technical bases, technology development, and technical risk identification and handling strategies.